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REMARKS

As can be seen from the above amendments, claims 1, 3, 4, 6, 7, 12, 13, 15-17, 22, 25, 27, 30-32, 34, 36-38, 43-45, 49, 55 and 56 have been canceled (in addition to any claims canceled in a previous response); and claims 8, 11, 14, 20, 23, 29, 33, 41, 46 and 47 have been amended. No additional fee is required for these amendments.

The claims thus remaining in this application are independent claim 47, and dependent claims 8, 11, 14, 20, 23, 24, 26, 29, 33, 41, 42, 46, 48 and 50-54.

The amendment to claim 47 incorporates the limitations set forth in previous claim 56 (which has been canceled). The amendments to claims 8, 11, 14, 20, 23, 29, 33, 41 and 46 change dependency of those claims to independent claim 47. The Applicants submit that these amendments are thus clearly supported by the specification as filed, and that no "new matter" has been added, and respectfully request entry of these amendments into the record for further examination of this application.

The Applicants would note that all of the above amendments are made without prejudice of any sort to pursue the canceled claims/subject matter, or any other currently unclaimed subject matter in this application, in one or more continuing/divisional applications.

Claim Rejections

In the aforementioned Office Action, the claims of the application were rejected on the following grounds:

(1) claims 1, 3, 4, 6-8, 11-13, 15-17, 20, 22-26, 29-34, 36-38 and 41-55 under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Howell et al (WO96/00808) in view of Hwo et al (US2002/0130433A1), Wandel et al (US2002/0132116A1) and Sun et al (US2002/0147298A1);

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(2) claims 14, 27 and 56 under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Howell et al in view of Hwo et al, Wandel et al and Sun et al as applied to claim 50, and further in view of Burton et al (USUS5804115);

(3) claims 1, 3, 4, 6-8, 11-13, 15-17, 20, 22-26, 29-34, 36-38, 41-44, 47-51 and 53-55 under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Scott et al (WO99/19577) in view of "admitted prior art";

(4) claims 45 and 46 under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Scott et al in view of "admitted prior art" as applied to claim 1, and further in view of Hwo et al;

(5) claim 52 under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Scott et al (WO99/19577) in view of "admitted prior art" as applied to claim 47, and further in view of Hwo et al; and

(6) claims 14, 27 and 56 under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Scott et al (WO99/19577) in view of "admitted prior art" as applied to claim 50, and further in view of Hwo et al.

While the Applicants respectfully traverse all of these rejections, the Applicants submit that, in light of the amendments detailed above (incorporation of the limitations set out in claim 56 into claim 47, and cancellation of independent claims 1 and 31), the rejections (1) and (3)-(5) have been rendered moot. The Applicants, therefore, respectfully request withdrawal of these rejections.

For clarity, the Applicants would further restate rejections (2) and (6) as follows:

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(2a) claims 47, 8, 11, 14, 20, 23, 24, 26, 29, 33, 41, 42, 46, 48 and 50-54 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Howell et al in view of Hwo et al, Wandel et al, Sun et al and Burton et al; and

(6a) claims 47, 8, 11, 14, 20, 23, 24, 26, 29, 33, 41, 42, 46, 48 and 50-54 are also rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Scott et al in view of "admitted prior art" and Hwo et al.

The Applicants continue to traverse these rejections.

The Present Invention

The present application is directed generally to a process of forming poly(trimethylene terephthalate) bulk continuous filament yarn (claims 47, 8, 11, 14, 20, 23, 24, 26, 29, 33, 41, 42, 46, 48 and 50-54), and a carpet prepared from a ply-twisted, heat-set poly(trimethylene terephthalate) produced from a specified process (claim 42).

As discussed below, it is in general known to prepare poly(trimethylene terephthalate) bulk continuous filament yarn by the process of:

- (a) providing a poly(trimethylene) terephthalate chip;
- (b) drying the chip;
- (c) melting the chip;
- (d) extruding (spinning) the molten poly(trimethylene terephthalate) into filaments;
- (e) cooling the filaments;
- (f) converging the filaments;
- (g) drawing the filaments;

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- (h) bulking the drawn filaments;
- (i) cooling the bulked filaments;
- (j) intermingling (entangling) the bulked filaments; and
- (k) winding the resulting filaments.

What distinguishes the presently claimed invention (in part) from this generally known process is a combination of several specific operating parameters that allow, in the context of a continuous bulk yarn process, the filaments to be drawn at very high speeds of greater than 3000 meters per minute. The ability to draw the filaments at this high speed results in a significant productivity increase versus the processes known at the time the present application was filed.

In its current broadest context (claim 47), this combination of operating parameters includes:

- (i) the poly(trimethylene terephthalate) having a number average molecular weight of about 29000 to about 40000;
- (ii) the poly(trimethylene terephthalate) having an intrinsic viscosity of about 0.95 to about 1.04 dl/g;
- (iii) the poly(trimethylene terephthalate) having a melt viscosity of about 450 up to about 700 Pascals at 250°C and 48.65 per second shear rate;
- (iv) making sure that the poly(trimethylene terephthalate) is substantially dry prior to further processing (less than about 50 ppm water content);
- (v) melting the poly(trimethylene terephthalate) in a specified type of extruder (single screw);

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(vi) once the filaments have been formed (by extrusion), cooled and converged into a yarn, drawing the filaments at a draw ratio of about 1.1 to about 4.0 to result in an individual filament denier of greater than 10, and a converged filament (yarn) denier greater than 210;

(vii) once the drawn filaments have been bulked, cooling the bulked filaments in a specified type of equipment (cooling drum);

(viii) intermingling (entangling) the filaments concurrently with or after the bulking, and/or before, concurrently with or after the cooling; and

(viii) winding the drawn, cooled, bulked, intermingled filaments on a specified type of equipment (wind-up machine).

It must again be stressed that, in the context of the present invention as set forth in claim 47, it is this combination of operating parameters, and not any one individually, that provides the overall processing advantages.

Rejection (2a)

As correctly recognized by the Examiner, and as indicated in the Applicants' previous Response, Howell et al (the primary reference) does generally disclose a process for preparing poly(trimethylene terephthalate) bulk continuous filament yarn comprising steps (a-k) as broadly described above.

As detailed in the Applicants' previous Response, Howell et al also discloses a variety of different operating parameters, some (but not all) of which individually may be considered to overlap with some of the parameters required by claim 47. Howell et al, however, does not provide a relationship between the various operating parameters, particularly with respect to improving the draw speed which is an important improvement of the presently claimed process.

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In the only specific example provided in Howell et al (Example 1), the poly(trimethylene terephthalate) had an intrinsic viscosity of 0.90, the resulting individual filament denier was 15, and the converged filament (yarn) denier was 1200. Under these conditions, the draw speed was only 2177 yd/min (about 1990 m/min). Thus, the conditions specified in the present claims provide and require an at least 50% increase in the draw speed as compared to the conditions utilized in Example 1 of Howell et al.

Based upon the established differences between the claimed invention and the teaching of the Howell et al reference, the disclosure of the Howell et al reference would need to be modified in order to arrive at the presently claimed invention. To do so for obviousness purposes, there must exist some supportable reason, suggestion or motivation which would lead the person of ordinary skill in the art to modify the disclosure of the Howell et al reference in the manner required to arrive at the presently claimed invention. See In re Chu, 36 U.S.P.Q. 2d 1089, 1094 (Fed. Cir. 1995). The mere fact that the prior art could be so modified does not make the modification or arrangement obvious unless the prior art suggests the desirability of such. See In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

Hwo et al is cited by the Examiner as teaching a draw speed of poly(trimethylene terephthalate) of from 2450 to 10000 m/min. While Hwo et al does in fact teach this number, the teaching is in the context of a partially-oriented yarn process, not a bulk continuous yarn process as set forth in the present claims. Hwo et al in fact gives no indication whatsoever as to how to adjust a bulk continuous yarn process in order to achieve these high draw speeds.

Wandel et al is cited by the Examiner as disclosing a poly(trimethylene terephthalate) having a melt viscosity as specified in claim 47. While Wandel et al does show that poly(trimethylene terephthalate) of an appropriate melt viscosity exists, Wandel et al does not in any way disclose or

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suggest the use of such poly(trimethylene terephthalate) in a bulk continuous yarn process, or how such use might affect the operation or results of such a process.

In a similar manner, Sun et al is cited by the Examiner as disclosing a poly(trimethylene terephthalate) having a molecular weight as specified in claim 47. While Sun et al does show that poly(trimethylene terephthalate) of an appropriate molecular weight exists, Sun et al does not in any way disclose or suggest the use of such poly(trimethylene terephthalate) in a bulk continuous yarn process, or how such use might affect the operation of such a process.

Burton et al does disclose a BCF process utilizing a cooling drum to cooled bulked filaments, but poly(trimethylene terephthalate) is not disclosed as a material suitable for use in Burton et al.

It is well established that a reference is only good for what it fairly teaches. As described in detail above, the present invention is not simply increasing the draw speed in a conventional poly(trimethylene terephthalate) bulk continuous yarn process - it is the selection of a specified combination of operating parameters that allows such draw speed to be significantly increased. As also discussed above, none of the secondary references in any way teach or remotely suggest how to adjust a bulk continuous yarn process in order to achieve high draw speeds for poly(trimethylene terephthalate) fibers as set forth in the claims.

It seems to be the position of the Examiner that the difference between the claimed invention and Howell et al can be characterized as a mere optimization, thus modifying Howell et al as required to achieve the presently claimed invention involves only routine skill and should be considered obvious. This position of the Examiner might in some instances be supportable if only one parameter was altered, and the relative effect of altering that one parameter was in a general sense predictable by a person of ordinary skill in the relevant art.

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In that instance, clearly only routine skill would be utilized.

The above straightforward situation, however, does not describe the differences between the presently claimed invention and teaching of the Howell et al disclosure. The presently claimed invention is not merely a simplistic optimization of the disclosure of Howell et al, but rather an overall selection of a combination of operating parameters that allows a significant increase in the draw speeds as compared to what is disclosed in the Howell et al reference.

While at most the person of ordinary skill in the art may try to manipulate one or more of the process parameters in order to achieve the result of faster draw speeds, the standard of obviousness is not "obvious to try". In re Tomlinson, Hall, and Geigle, 150 U.S.P.Q. 623, 626 (C.C.P.A. 1966). Instead, as discussed above, there must exist some reason, suggestion or motivation for modifying the specific combination of process parameters as set forth in the present claims, and the present record is completely devoid of any supportable such reason, suggestion or motivation.

In fact, the only way to arrive at the presently claimed invention from the fair disclosures of the various references is with hindsight benefit of the Applicants' disclosure and claims. Hindsight, however, is an inappropriate perspective in which to judge patentability. In re Deminski, 230 U.S.P.Q. 313, 316 (Fed. Cir. 1986).

The Applicants, therefore, respectfully submit that the Examiner's position in this rejection cannot be supported legally or factually, and request withdrawal of this rejection.

Rejection (2a)

The Applicants submit that this rejection cannot be supported for the same reasons as set forth above.

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As correctly recognized byu the Examiner, Scott et al in facts incorporates the disclosure of Howell et al with regards to producing BCF from poly(trimethylene terephthalate). The Examiner goes on to state that Scott et al discloses drawing poly(trimethylene terephthalate) fibers at speeds of 4000-6000 m/min, referring to the passage in Scott et al at lines 15-18 on page 12. What this passage in fact says is that, generally, in a spin-draw process take up speeds are in this range. This passage says nothing about drawing speeds, or even remotely how to adjust the parameters generally disclosed in Howell et al so as to achieve the currently claimed process to realize increased drawing speeds, much less in the context of a poly(trimethylene terephthalate) fiber spinning process.

As for the "admitted prior art", the mere fact that a variety of possible poly(trimethylene terephthalate) polymers were available, or potentially could be made, does not in and of itself teach one of ordinary skill in the relevant art how to adjust the BCF process disclosed in Scott et al (Howell et al) in a manner to achieve the presently claimed process.

Hwo et al (discussed above) adds nothing to the disclosure of Scott et al (or any other art) that would lead one of ordinary skill in the art to modify a BCF process.

Again, it appears that the Examiner has taken unrelated bits and pieces of various references and combined those in an unsupportable hindsight manner to arrive at the presently claimed invention. Since this type of hindsight reconstruction cannot be the basis for an obviousness rejection, the Applicants respectfully request withdrawal of the same.

Conclusion

In view of the above, the Applicants submit that, on the present record, the Examiner has not established a *prima facie* case of obviousness of the claims in this application, and that these claims are in fact patentable over any supportable combination of the cited references.

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The Applicants, therefore, respectfully request withdrawal of the obviousness rejections of record, allowance of the claims as currently pending, and advancement of the present application to issue at the earliest possible date.

Respectfully submitted,



BART E. LERMAN
ATTORNEY FOR APPELLANTS
REGISTRATION NO. 31,897
TELEPHONE: 302-992-5285
FACSIMILE: 302-992-5374

DATE: 11/6/06